

CLAIMS

- (1) A producing method of nuclear spin polarized xenon gas characterized in that a glass cell having solid rubidium and solid xenon filled in the pressure reducing state of being absent in oxygen is heated to be gas xenon and gas-liquid mixed rubidium, to which a magnetic field is applied to irradiate a laser beam.
- (2) The producing method according to Claim 1, wherein xenon gas is introduced so as to maintain fixed pressure while taking out the nuclear spin polarized xenon gas produced by irradiating the laser beam.
- (3) The producing method according to Claim 2, wherein in replacing a xenon gas supply device, the xenon gas supply device side is made to be a primary side through a first air operate valve, and the xenon gas introducing side of the glass cell is made to be a secondary side, and vacuuming of the primary side piping and pressurization-leaving by nitrogen gas are repeated automatically more than three times.
- (4) The producing method according to Claim 3, wherein in replacing the glass cell, vacuuming of piping from the primary side piping, the secondary side pipe and piping to a valve on the polarized xenon gas take-out side communicated through a second air operate valve with the primary side pipe and pressurization-leaving by nitrogen gas are repeated automatically more than three times.
- (5) A producing method of a glass cell having solid rubidium and solid xenon filled in vacuum characterized in that a chamber housing therein rubidium filled into a glass vessel and said glass cell are connected so that they are communicated by piping, said piping is exhausted by a vacuum generator, after which a glass vessel filled with rubidium is broken to heat metal rubidium, piping and glass cell, rubidium of gas is made present

within the piping and glass cell, then said glass cell is cooled, metal rubidium is precipitated as a solid into the cooled portion, xenon gas is introduced into the glass cell and closed, and the glass cell is cooled to solidify xenon within the glass cell.

(6) A producing apparatus of nuclear spin polarized xenon gas, comprising means for heating a glass cell having solid rubidium and solid xenon filled in the pressure reducing state of being absent in oxygen to be gas xenon and gas-liquid mixed rubidium, and means for applying a magnetic field to the glass cell to irradiate a laser beam.

(7) The producing apparatus according to Claim 6, further comprising means for introducing xenon gas while taking out the produced nuclear spin polarized xenon gas, and pressure regulating means for controlling said operation so that pressure may not drop.

(8) The producing apparatus according to Claim 6 or 7, wherein a xenon gas supply device side is made to be a primary side piping through a first air operate valve, piping extended up to a valve for introducing xenon gas into a glass cell is made to be a secondary side piping, branched pipings connected to said primary side piping through a second air operate valve, one of said branched pipings reaching a vacuum generator and the other reaching a valve on the xenon gas taking-out side of said glass cell, and pressure regulating means for regulating pressure introduced into the glass cell is provided on the primary side piping.

(9) A producing apparatus of a glass cell having solid rubidium and solid xenon filled in vacuum comprising: piping connected so that a chamber housing rubidium filled into a glass vessel and the glass cell are connected, means for vacuuming the piping, means for breaking glass having rubidium filled in, means for heating metal rubidium, piping and a glass cell, and

means for cooling the glass cell and precipitating metal rubidium on the cooled portion